

SITE SPECIFIC PROJECT PLAN FOR:
FLUVIAL GEOMORPHIC ASSESSMENT OF NORTHERN
CONNECTICUT RIVER TRIBUTARIES

Operated Under:
Generic QAPP for Stream Morphology Data Collection

Fifth Draft
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3- Distribution List

Table 1 lists people who will receive copies of the approved Site Specific Project Plan (SSPP) under the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated June 17, 2003.

Table 1. SSPP Distribution List

| SSPP Recipient Name | Project Role | Organization | Telephone number and e-mail address |
|---------------------|---------------------------|------------------------------------|--|
| John Field | Technical Project Manager | Field Geology Services | 207-491-9541 jfield@field-geology.com |
| Sharon Francis | Project Manager | CRJC | 603-826-4800 sharonf@cyberportal.net |
| Andrew Patmos | Field Assistant | Field Geology Services | 518-878-6351 andypatmos@hotmail.com |
| Eric Williams | Program Manager | NHDES, Watershed Management Bureau | 603-271-2358 ewilliams@des.state.nh.us |
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| Warren Howard | USEPA Project Manager | USEPA New England | 617-918-1587 Howard.Warren@epa.gov |

4- Project Task Organization

Figure 1 outlines the organization structure of the project personnel.

Figure 1. Project Organizational Chart

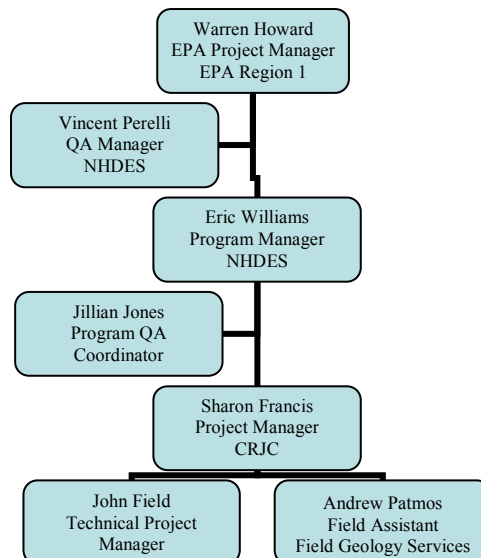


Table 2 identifies the roles and responsibilities of those individuals involved in the project.

Table 2. Personnel Responsibilities and Qualifications

| Name and Affiliation | Responsibilities | Qualifications |
|---|---|--|
| Sharon Francis, CRJC | Project Manager | Trained in data management and experienced project manager |
| John Field, Field Geology Services | Technical Project Manager Project QA/QC Officer | Trained in stream morphology data collection, analysis, interpretation, and stream survey techniques |
| Andrew Patmos, Field Geology Services | Field Assistant | Trained in stream survey methods |
| Jillian Jones, NHDES, Watershed Management Bureau | Reviews QAPP preparation and other QA/QC activities | On file at NHDES |
| Eric Williams, NHDES, Watershed Management Bureau | Reviews and oversees projects funded by DES 319 Restoration Grants in Connecticut, Saco, and Androscoggin watersheds. | On file at NHDES |
| Vince Perelli, NHDES Planning Unit | Reviews and approves QAPPs | On file at NHDES |
| Warren Howard, US EPA Region I | EPA Project Manager | On file at US EPA |

5-Site Information

The fluvial geomorphic assessment area includes 72 acres (12-mile reach) along the Mohawk River and 109 acres (18-mile reach) along the Upper Ammonoosuc River (see Project Location map in Appendix A). The assessment area is located in the towns of Colebrook, Groveton, and Stark, New Hampshire. Please refer to site map in Appendix A for project locations.

The two watersheds are sparsely populated rural regions with land use dominated by agriculture in the valley bottoms. The surrounding uplands are heavily forested. Commercial and industrial developments are found in Colebrook and Groveton, the largest towns along the Mohawk and Upper Ammonoosuc Rivers, respectively.

6-Project Rationale

A. Problem Definition

The purpose of this project is to locate the major sources of sediment production on the Mohawk and Upper Ammonoosuc Rivers, tributaries to the Connecticut River, and identify the major causes for bank instability. This will enable the prioritization of future restoration on those areas with the greatest potential for improving water quality in the Connecticut River watershed as a whole.

The *Fluvial Geomorphology Assessment of the Northern Connecticut River, Vermont and New Hampshire* completed in 2004 identified sediment inputs from tributaries as a major cause of erosion problems. The 2004 assessment report is on file at the New Hampshire Department of Environmental Services. A closer examination of the tributaries is necessary to resolve questions about bank instability on the mainstem of the river. A geomorphic assessment of the Mohawk and Upper Ammonoosuc Rivers will provide a framework for understanding the impacts of agricultural practices, dam construction, riparian vegetation removal, channelization, and channel incision on channel stability and bank erosion. Identification of the sites most impaired through the assessment will guide future restoration projects and allow focus on those sites with the greatest potential for improving conditions on the tributaries and on the mainstem.

Results of the 2004 geomorphology assessment indicate that 66 percent of the river's banks are either eroding, have been protected from erosion (i.e., riprap), or are sensitive to future erosion. Three major causes for erosion were identified during the assessment: channel straightening by humans in the 19th century; sediment production from high banks along the mainstem; and sediment inputs from tributaries. To resolve erosion problems associated with sediment inputs from tributaries, a closer examination of the tributaries themselves is necessary in order to determine the amount of sediment produced in the tributary watersheds and stored along the tributary channels. In addition to the benefits that the assessment holds for addressing erosion problems along the Connecticut River mainstem, the assessment may help address infrastructure and landowner conflicts that exist on the tributaries as well. Resolving these conflicts will be far more successful with a comprehensive understanding of the location and causes for erosion on the tributaries.

B. Historical Data

Previous data collected for the 2004 fluvial geomorphology assessment will not be used in the completion of the assessment of the Mohawk and Upper Ammonoosuc Rivers. Historical aerial photographs acquired at the Natural Resources Conservation Service's Field Office in Lancaster, NH will be used to identify changes in channel position and human land use during the past 50 years. Channel changes back to 1930 will be assessed using historical topographical maps available on-line at <http://docs.unh.edu/nhtopos/nhtopos.htm>.

7-Project Description and Schedule

The Mohawk River and the Upper Ammonoosuc River will be assessed using procedures described in the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated June 17, 2003. The assessment data will be used to identify those watershed factors affecting channel stability and to document the river channels' response to those factors. Mapping along the Mohawk and Upper Ammonoosuc Rivers will reveal the distribution of erosion sites and other channel features such as bank composition and riparian buffer width. The assessment information will be added to a

GIS database to prioritize restoration sites that will simultaneously reduce conflicts on the tributaries while reducing sediment delivery to the mainstem. Engineering design plans for the top priority site on each tributary will be developed to ensure the assessment results are practically applied to address erosion issues. The assessment results will also inform continuing work on the Connecticut River downstream of the Mohawk and Upper Ammonoosuc River confluences. Refer to the 2004 *Watershed Restoration Grant Proposal for Fluvial Geomorphic Assessment of Northern Connecticut River Tributaries*, Sections 20 and 21 on file at NHDES for project tasks schedule.

The mapping of channel features to be completed as part of the assessment will follow the Standard Operation Procedures outlined in Appendix B. This represents the only deviation from the *Generic Quality Assurance Project Plan for Stream Morphology Data Collection* dated June 17, 2003.

8-Final Products and Reporting

The final products for this project include the following:

- Phase 1 Assessment database
- Phase 2 Assessment database
- GIS maps and statistics of channel features
- Two public education meetings
- Phase 3 Assessment database of one site on each tributary
- Final report with drafted cross sections, longitudinal profiles, and substrate particle size analysis
- Conceptual engineering designs of multiple options for bank stabilization at one site on each tributary
- Semi-annual progress reports

All products will be submitted by John Field, in both electronic and paper copies, to the NHDES Watershed Assistance Section for review and approval.

The final report will include a description of the environmental results and the measures of performance for this project: reductions in sediment loading; decreasing bank erosion rates; and increasing vegetation growth on bars. Reduction of sediments will ultimately result from the assessment that will lead to design of bank stabilization projects.

Although implementation will occur as part of a future project, cross sections surveyed as part of the Phase 3 assessment on each tributary will be monumented for future monitoring. Ground photographs will also be taken of each site to provide the basis for “before and after” photographs to document vegetation growth on bars. The NHDES SOP for photo documentation, to be used for this project, is on file at NHDES. The cross sectional and longitudinal profile data will also be used to calculate sediment loading during a bankfull event. This data will be used to compare with sediment loading calculated after restoration is complete at the selected sites.